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ABSTRACT

The three studies involved attempt to assess the nature of cooperative and competitive behavior of young children in different socioeconomic classes. In the first study, 36 pairs of Head Start children, representing Mexican-American, Negro and Caucasian ethnic groups, were investigated concerning their cooperative-competitive behavior in relation to their ethnic differences. Variances in behavior were marked from group to group. The second study involved 240 children, half of whom were enrolled in Head Start. The above three ethnic groups were represented equally in this project. Ethnic background was found to affect competitive behavior in only a partial way; it related to sex. Mexican-American boys were less competitive than other groups. The third study compared cooperative-competitive behavior in kibbutz and urban children in Israel, using 40 kibbutz children and the same number of city children, both with an age mean of eight years. Kibbutz children showed more cooperative behavior than did the city children. (MK)

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Sub-Cultural Determinants of Cooperative and Competitive Behavior

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Research evidence indicates that need for achievement is in part a function of cultural and social class variables, but there is no consensus as to whether there is a difference in the motivational value of competition as compared to cooperation with children from middle or lower socioeconomic groups. The following three studies attempt to assess the nature of cooperative and competitive behavior of young children in different socioeconomic classes.

Cooperative and Competitive Behavior of Pre-school Children as a Function of Reward Condition, Sex, and Ethnic Background.

There seems to be a generally accepted belief that patterns of cooperation and competition are a function of cultural and social class variables. Greenberg (1932) found some competition in two-year-old underprivileged Viennese children, while Leuba (1933) found little competition in an American middle-class sample until age four. McKee and Leader (1955) reported that low-status preschool children were more likely to be rated as showing competitive behavior than high status children. These findings seem to contradict what could be expected on the basis of recent research on social class and achievement motivation, as well as with the view of some current writers on cultural deprivation. Riessman (1962) states that the "cooperativeness and mutual aid that mark the extended family" are characteristic of the underprivileged and constitute a major asset that should be considered in educational planning. Strom (1965) emphasizes that middle-class children are more apt to achieve via individual competition than the group-centered lower class child. Neither of the above authors, however, provide any experimental documentation for their conclusions. The reason may be that very little experimental work has been carried out in the United States on ethnic and social class differences in the cooperative vs. competitive motivation of children.

By contrast, anthropologists (e.g. Mead, 1937) have long been concerned with the cooperation-competition continuum in descriptive accounts of other cultures. Whiting (1963) contains frequent references to observations of cooperative and competitive behavior. Other investigators (e.g. Anderson, 1937, Chittenden, 1942, and Stendler, Damrin, and Haines, 1951) have studied

competitive-cooperative behavior in individual and group reward conditions. However, many of these investigations have been open to criticism in that (1) objective recording measures were not used; (2) the exact nature of competitive responses was not specified; and (3) the ethnic background of the samples was not always given.

In the present study, the cooperative-competitive behavior of young children from three ethnic groups within the same socioeconomic class was investigated, using a new device for obtaining immediate and objective measurement in a controlled, social interaction situation. Pairs of Project Head Start children played a game requiring social interaction in order to win prizes. Behavior such that one child pursued his own progress at the expense of the other member of the pair was defined as competition. If each child actively pursued his own progress but in such a way that the progress of both children was facilitated, their behavior was defined as cooperation. The study investigated the effects of individual vs. group reward on the social interaction of preschool children, by sex and ethnic groupings.

Method

Subjects.

A total of 36 pairs of children from five Project Head Start centers in the Los Angeles area were matched for age and sex. Six pairs of boys and six pairs of girls were tested from each of three ethnic groups: Mexican-American, Negro, and Caucasian, with mean C.A. of 4.9, 4.6, and 5.3, respectively. Within each ethnic group, the age range was approximately 1.3 years. All children had attended the Head Start program for from one to twelve months, with the older children having attended the longest.

Apparatus.

The game involved two children, pulling a rope 46 inches long, with eleven

one-and-three-fourths-inch wooden balls, strung at various intervals over 30 inches of the rope, through a two-inch diameter opening in a movable block of transparent plastic mounted at the top of a wooden ramp. The ramp and plastic block were attached to a wooden structure that was clamped onto the top of a small table. (See Figure 1.)

 Insert Figure 1 about here

There were two sets of rope-and-ball sequences, one for each child. The ramp had dividers to prevent the ropes from tangling before reaching the opening. Whenever the ropes were pulled so that two balls arrived at the opening simultaneously, the progress of the game was temporarily blocked. When the pull on the ropes was lessened, the balls slid back down the ramp thus ending the blocking. When the movement of the balls through the opening was halted, the pressure against the plastic block activated an electric counter and timer which automatically recorded the number of such blocks as well as the accumulated blocking time for each trial. If after eleven seconds neither child had succeeded in pulling all the balls through the opening, a buzzer sounded and the trial was terminated. Prizes were inexpensive trinkets such as rings, plastic cars, figures, etc.

Procedure and Instructions:

Each pair of children was taken from the classroom to a quiet room for the game. All pairs were given the following instructions: "This is a game where you may win prizes which you may keep. Whenever you win, we will put a prize in this bag that has your name on it. You play the game by pulling ropes like this." The examiner demonstrated the procedure by first pulling one rope,

then both ropes together. Then continued: "You start pulling the ropes when I say go, and in order to win you have to pull your rope all the way through the hole before you hear the buzzer. Let me show you how the buzzer works. (E demonstrated the buzzer). When the buzzer sounds I will stop the game like this. Now I will tell you how you can win prizes."

• Half of the Ss in each ethnic-sex category were given instructions for the individual reward condition first, and half were given instructions for the group reward condition first, as follows:

Individual reward condition: "In this game only one person can win. There is only one prize each time. Whoever pulls his rope all the way through the hole first, before the other person pulls his rope all the way through and before the buzzer sounds, wins the prize. We will play the game more than once, but only one person can win each time. When I say go, you may start pulling."

Group reward condition: "In this game, both of you can win a prize every time. Everybody who pulls his rope all the way through the hole before the buzzer sounds, wins a prize. When I say go, you may start pulling."

Between conditions, each pair was told: "Now we are going to change the game. Now you don't have to be first (or you have to be first) in order to win a prize."

A trial began when E said go, and the switch for the 11 second time-delay relay buzzer was activated. A trial was completed when one child pulled the entire length of his rope through the opening. Whenever a trial lasted 11 seconds, the buzzer sounded and E ended the game for that trial. The Ss were reminded of the instructions before every trial. There were six trials in each condition. The number of blocks, the accumulated blocking time, the total time to completion of each trial, and the number of balls remaining to be pulled through the opening at the end of each trial were recorded by E after every

trial. Immediately after each trial the Ss were shown the prizes they had won for that trial.

After all the trials, Ss were given an opportunity to give and trade prizes; and E gave additional prizes so that the rewards were evenly distributed.

Criteria for Rating Interactions.

Neither the total number of blocks (number of times balls blocked the opening) nor the total time of blocking for a trial is an adequate measure if taken alone. A low number of blocks may indicate that the Ss interacted slowly and non-assertively, that the Ss competed to the degree of refusing to release the balls when blocked, or that the Ss non-assertively maintained the blocks because they did not foresee the advantages of releasing the ropes. Similar possibilities existed if blocking time alone were considered. For this reason, the number of blocks, the accumulated blocking time, and the number of balls remaining to be pulled through the opening at the end of each trial had to be considered together in determining the kind of interaction that had occurred on each trial.

If the blocking time for a trial was high and if the number of blocks or activity on previous trials indicated that the Ss understood the principle of releasing the ropes in order to make progress, the interaction was considered to be competitive because the Ss must have been actively attempting to block each other and yet make progress individually. The following rule was followed: If the accumulated blocking time for the trial was over three seconds and in addition either (1) the number of blocks was 15 or more or (2) the pair had, on a previous single trial, pulled a total of 10 balls through the opening, the category "active competition" was assigned.

If the blocking time was low, it was concluded that the Ss were not trying to block each others progress and thus were acting non-competitively. If, in addition, the number of blocks was high, the Ss must have been actively pursuing progress (getting blocks) and yet willing to release the ropes when blocks occurred (thus low blocking time). The following rule was followed: If the accumulated blocking time for a trial was less than 2.5 seconds and in addition the number of blocks was 15 or more, the category assigned for the trial was "active cooperation."

The numerical limits in these rules were established previous to examination of the data and on the basis of blocking scores obtained by the Es when intentionally competing or cooperating on the task. Trials where the Ss behavior was non-assertive or simply did not fit into one of these categories were considered "other" in the following analysis.

Results

Each pair of Ss was assigned an interaction category (cooperation, competition, or "other") for each trial. Table 1 shows the breakdown in assign-

Insert Table 1 about here

ment of interaction categories for the 36 pairs of Ss on each trial in both the individual and group reward conditions. Because of the somewhat arbitrary method of assigning interaction categories, comparison of the mean interaction scores for trials 1-6 within the individual or group reward conditions is not as meaningful as comparisons between conditions. That is, it cannot be concluded with much confidence that interactions within the individual reward condition were more competitive than cooperative. This is because the inter-

actions classified as "other" might include some "weak" cases of cooperative behavior. The comparison of scores between reward conditions is more meaningful. Although in the group reward condition the mean per trial incidence of cooperation is slightly greater and the incidence of competition is slightly less than in the individual reward condition, the real difference between conditions appears in the trend over trials for cooperative and competitive interactions. No trends are evident in the individual reward condition, but in the group reward condition the incidence of cooperation appears to increase from trial to trial and the incidence of competition appears to decrease. To test the hypothesis of no change in the percentage of cooperative interactions over trials in the group reward condition, the Q statistic was used (Winer, 1962, p. 139). A chi-square distribution was used to approximate the sampling distribution of the Q statistic. The data contradict the hypothesis of no change [$Q=68.2$, $\chi^2_{.99}(5)=15.1$]. The systematic increase in cooperation over trials in the group reward condition is statistically significant at the .01 level. Application of the same test to the changes in the incidence of competition in the group reward condition suggests that the decrease in competition is significant between the .05 and .10 levels [$Q=9.4$, $\chi^2_{.95}(5)=11.1$]. The major difference effects appear only in trials five and six. Each pair of Ss was given a score of 0, 1, or 2 for each interaction category, with the score for a particular interaction category being the total number of times the category had been assigned for trials five and six. There was one analysis of variance for cooperation scores and another for competition scores. Both analyses investigated the following factors: ethnic background (Mexican, Negro, or Caucasian), sex, condition (individual or group reward), and order (individual-group or group-individual reward).

The analysis of variance on cooperation scores found the ethnic factor to be significant at the .05 level ($F=3.5$, $df=2$) and the individual vs. group reward effect to be significant at the .01 level ($F=9$, $df=1$). Mexican-American children

were cooperative on eight out of 48 trials, Caucasians on 11 of 48 trials, and Negroes on 19 of 48 trials. In the individual reward condition, 12 of the 72 trials were cooperative and in the group reward condition 26 of the 72 trials were cooperative. Only the ethnic x order and the order x sex x condition interactions were significant, but in no combination of effects were the above rank orders changed.

The analysis of variance of competition scores shows a significant effect at the .05 level for the ethnic variable ($F=3.5$, $df=2$). Negroes were competitive on eight of 48 trials, Mexican-Americans on 18 of 48 trials, and Caucasians on 24 of 48 trials. No significant interaction effects were found.

The number of trials in which no S completed the task and thus in which no one was rewarded is a measure of non-adaptive competition. This was particularly maladaptive in the group reward condition where both Ss could have been rewarded if they hadn't blocked each other's progress. In the individual reward condition, 16 of the 36 pairs had a total of 45 trials in which no one was rewarded; in the group reward condition 24 of the 36 pairs had a total of 56 trials in which no one received prizes.

Discussion

The results suggest that the instructions "only one person can win" in the individual reward condition or "you can both win" in the group reward condition had little immediate effect on the cooperative-competitive behavior of these preschool children. However, in the group reward condition the children became more cooperative over trials and less competitive. By trials five and six the group reward children were significantly more cooperative and somewhat less competitive than children in the individual reward condition. It appears that the children's cognitive set for cooperative-competitive interaction was little affected by the instructions, but that through experience they either perceived

the desirability of cooperating or were affected by the rewards so that cooperative behavior was reinforced in the group reward condition.

It should be noted that competitive behavior did not increase after the first trial in the individual reward condition even though competitive behavior was being reinforced. Perhaps the original cognitive set for the individual reward condition was competitive and thus the children were competitive from the first to the last. Since the children were just as competitive on the early trials in the group reward condition, the original cognitive set in the group reward condition must also have been competitive. It appears that a disposition to be competitive is more strongly acquired in these preschool children than a disposition to be cooperative.

The strength of this "set" to be competitive is evident in the fact that there was a higher incidence of trials (56) where no one was rewarded for the group reward condition than for the individual reward condition (45). This was true even though it was obviously maladaptive for Ss to block each other's progress when it was possible for both to get prizes. Certainly some of the children were more interested in being first than in getting prizes. One Mexican-American girl continued to say, "Me first, me first, I was first, wasn't I?" after every trial in the group reward condition. Others said, "I beat", or "I won" even after being told by E that both children had won. This suggests that for some preschool children achievement motivation is highly developed and that pride in winning may be more important than material rewards. It also seems likely, however, that the possibility of cooperating never occurred to many Ss. They may have more fully acquired the interaction pattern of competition than that of cooperation.

The analysis of trials five and six in both reward conditions suggests a significant ethnic difference. The Negro children appear most cooperative and

least competitive; the Mexican-American children appear least cooperative and rank second in competitiveness; the Caucasians appear most competitive and rank second in cooperativeness. While these ethnic differences may be open to question because of the differences in mean ages, there is no tendency for age and cooperation scores to correlate independent of ethnic groups. There was a positive correlation between age and competition scores within ethnic groups, but even among pairs of Ss matched for age, the same rank order differences in competition scores for ethnic groups listed above were maintained. The results seem to justify concluding that there are differences in patterns of cooperative-competitive interaction among ethnic groups. The Negro Head Start children were most cooperative and least competitive; the Mexican-American Head Start children were least cooperative; and the Caucasian children appeared most competitive. These findings are in line with those of Sampson and Kardush (1965) who found seven-to-eleven-year-old Negro pairs to be more collaborative and less competitive than Caucasian pairs on a non-zero-sum game.

Finally, the present study suggests that the new apparatus was sensitive to differences in cooperative-competitive behavior. In future investigations of ethnic variables and other correlates of cooperative behavior in preschool children, attempts will be made to compare new instruments for measuring cooperative behavior with the apparatus described here.

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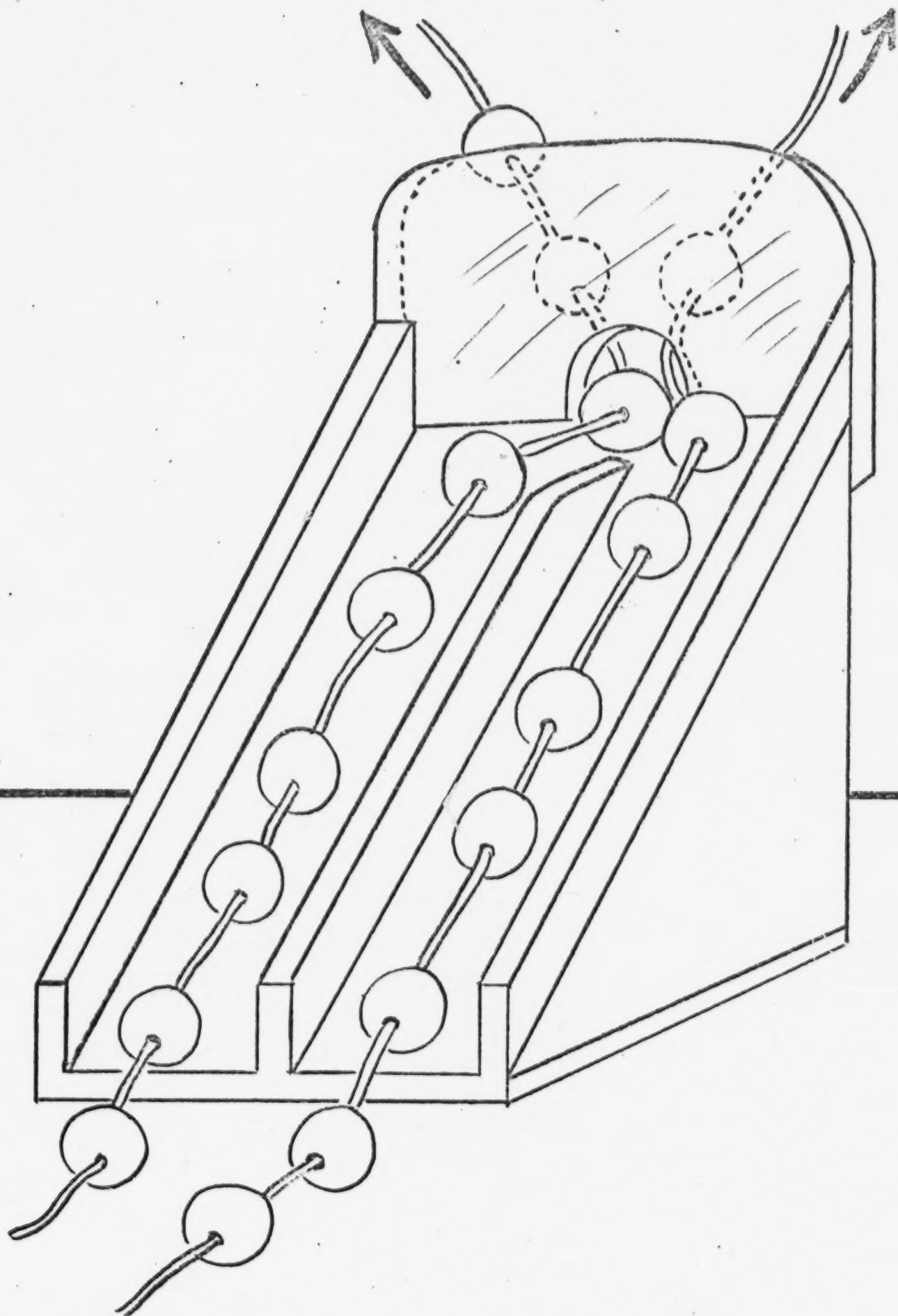


Fig. 1. The Cooperation Game. The opening through which the balls may be pulled is in a movable piece of plexiglass which activates a counter and timer whenever the balls are blocked at the opening.

Table 1

Cooperative or Competitive Interactions x Condition x Trial

Reward Condition	Interaction Category	Trial						
		1	2	3	4	5	6	Mean
Individual Reward (N=36)	Cooperation	5	8	6	8	5	7	6.5
	Competition	15	15	17	14	15	14	15.0
	Other	16	13	13	14	16	15	14.6
Group Reward (N=36)	Cooperation	4	5	7	9	12	14	8.5
	Competition	14	19	15	12	12	9	13.5
	Other	18	12	14	15	12	13	14.0

Group vs individual reward contingencies as a measure of differences
in cooperation and competition in preschool children
of different socioeconomic backgrounds.

In an early study, Maller (1929) examined the cooperative and competitive behavior of children from three socioeconomic levels. His data indicated that competitive situations were more effective in stimulating work output than were cooperative situations for all social class groups.

McKee and Leader (1955), however, found that a greater percentage of low status preschool subjects showed competitive behavior in a free play situation compared to high status pairs. On the basis of this evidence, McKee and Leader suggested that "youngsters from lower socioeconomic levels have learned the desirability of successful competition through having to compete for a limited supply of material benefits", and that "those who are deprived of status are likely to seek it more vigorously than those who are not so deprived."

This view is inconsistent with what would be expected on the basis of research in social class and achievement motivation (McClelland, 1961), as well as with the view of some current writers on cultural deprivation. (Cf. Riessman, 1962, Strom, 1965, et al.) Romney and Romney (1963) investigated an agricultural, Indian-speaking community in southern Mexico and observed that the barrio children were much less aggressive and competitive than were children from the non-agricultural section of the village. They accounted for this finding by hypothesizing sub-cultural differences in child-rearing practices related to the development of effective competition.

Madsen (1967) compared children representative of three sub-cultural groups in southern Mexico on experimental tasks designed to assess cooperative vs. competitive motivation in seven-to-nine-year-old children. Indian village children demonstrated significantly more cooperation and less competition than did urban middle class children. Urban lower class children, however, responded more like the village children than like the urban middle class children. The question therefore remains as to whether competitive or cooperative behavior is characteristic of socioeconomic class, a particular subcultural identification, or both.

In the present study, the cooperative and competitive behavior of four-to-five-year-old children of three ethnic groups, each at two socioeconomic levels, was assessed, using an apparatus which permitted objective definition and measurement of this variable.

Method

Subjects

Two hundred and forty children from the Los Angeles area participated in the study. One half of these subjects were enrolled in Project Head Start centers. Of these, 40 Ss were Negro, 40 were Mexican-American, and 40 were Caucasian. The Head Start Ss were considered as representative of low economic group membership in that only families whose income is less than \$3,000 a year are eligible to enroll their children in the program. The other 120 Ss were enrolled in Children's Centers, which are state supported facilities where approximately 80% of the children are from single-parent homes. While the economic level may not be appreciably superior to that of the Head Start group, the fact that the parent, who is usually the mother, is working means that this is a more upwardly mobile group, and thus more representative of the middle-class population. The three ethnic groups in both categories were represented equally

by boys and girls.

Apparatus.

The apparatus was identical to that used by Madsen (1967). This consists of a board 18" square with a small eyelet screwed into each corner. The device enables a child stationed at each corner of the board to pull a string through the eyelet towards himself. The four strings are fastened to a movable object in the center of the board. The object is a metal weight which serves as a support for a ball point pen filler. The pen protrudes downwards through a hole in the center of the weight and constant downward pressure is maintained by an elastic band. Thus, by covering the board with a piece of paper for each trial, a permanent record of the responses of each set of Ss is obtained. Circles were drawn on each corner of these record sheets to identify the goal circle for each S.

Procedure.

Four Ss of the same sex, economic group, and ethnic group were introduced to the experimental game. The experimenter pulled the string and showed Ss that by doing so a line was drawn on the paper. The name of each S was then written in the circle in his corner. Each S was then told that he would receive a prize when the pen drew a line across his circle. Prizes were given (trinkets) as soon as a circle was crossed. At the conclusion of each trial the pen was returned to the center of the board for the next trial. Each group of four Ss received 20 trials, with four trials recorded on each sheet. If, on a given trial, a circle was not crossed within one minute, the trial was stopped and no S received a prize.

Results

Any line that deviated more than two inches from a straight path from the center of the board, or reversed direction within those limits, was considered to be a competitive response. Other lines were considered non-competitive in that the children were not pulling against each other. The mean non-competitive responses per subject category are indicated in Table 1. A 2 x 2 x 3

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Insert Table 1 about here

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(economic class x sex x ethnic group) analysis of variance indicated no significant main effects of class, sex, or ethnic background. In an analysis of simple main effects, the only significant difference was that Mexican-American boys were less competitive than Mexican-American girls ($F=4.20$, $P<.05$), and that Mexican-American boys were less competitive than Negro boys ($F=5.7$, $P<.05$) and Negro girls ($F=4.62$, $P<.05$).

Discussion

The results did not indicate any substantial relationship between the socioeconomic factor and degree of competitiveness. Ethnic background was found to affect competitive behavior in only a partial way in that it interacted with sex. Mexican-American boys were less competitive than Mexican-American girls, as well as Negro and Caucasian boys and girls. The fact that the vast majority of responses of four-year-old children from all ethnic and socioeconomic categories were competitive suggests that, as Piaget holds, there is a strong cognitive component in competitive behavior and that this behavior does not emerge, regardless of sub-cultural differences, until a later age. In other words, four-year-old children may not have the cognitive capacity to cooperate over trials on the task used in

this investigation. That this may be the case is supported by a replication study (Shapira and Madsen, 1967) carried out on an Israeli kibbutz. In this setting, where cooperative behavior is reinforced at a very early age, four-year-old children were consistently competitive, while six-year-olds were very cooperative. It seems that an interesting line of investigation would be a developmental study to determine at what ages differences in cooperation and competition become apparent in different ethnic and socioeconomic groups. Further work is also needed to determine whether competitive situations do actually produce, as Maller contends, more effective learning. In the light of such research, interventions designed to facilitate the emergence of the desired types of social interaction at an early age may be suggested.

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Table 1
Mean Non-Competitive Trials per Subject Category

	Head Start		Day Care	
	Female	Male	Female	Male
Negro	.4	.2	1.2	.6
Mexican-American	1.2	4.4	.8	4.8
Caucasian	.4	1.0	2.0	3.0

A cross-cultural comparison of cooperative and competitive behavior
in kibbutz and urban children in Israel

In an experimental study of subcultural differences in competitive and cooperative behavior, Madsen (1967) found that both rural and urban poor children in Mexico were dramatically more cooperative than Mexican urban middle class children. An attempt was made to account for these differences in performance on experimental tasks by reference to the environmental milieu in which the different subcultural groups had developed. The study reported here was carried out in Israel and used the same techniques to compare two other subcultural groups: children from agricultural social communes called kibbutzim and those from an urban environment.

Children in an Israeli urban middle class community are encouraged by parents and teachers to achieve and succeed. Competition is an acceptable means of arriving at this goal. In the kibbutz, on the other hand, children are prepared from an early age to cooperate and work as a group, in keeping with the objectives of communal living. Spiro (1958) found, through questionnaires given to parents in the kibbutz, that generosity and cooperation were the most frequently rewarded behaviors, while selfishness and failure to cooperate were among the behaviors most frequently punished. He also found that parents and nurses used the technique of rewarding for success and punishing for failure in less than five percent of the total socialization process.

The formal teaching methods in the kibbutz are also noted for their minimal emphasis on competitive goals and techniques. Grades and examinations are viewed as unnecessary or even undesirable. Competition, with all its

punitive aspects, is far less intense in the classroom of the kibbutz than in that of the city. Not only do the agents of socialization avoid inducing a favorable set toward competition, but also the children themselves develop an attitude against competition. Spiro found that only one out of 28 students saw himself or his peers as being competitively motivated. By far the majority of the students said that their desire was primarily to become equal to their peers or, as Rabin (1965) observed, to raise the achievement level of their group as a whole. Generally, kibbutz children do not accept competition as a socially desirable norm and dislike those who try to excel over members of their own group. This anti-competition attitude is so strong that, according to some teachers, students are ashamed of being consistently at the top of the class. Spiro also found that these cooperative attitudes and behaviors increase with age, concomitant with a decrease in competitive motivation.

In line with these basic differences in child-rearing practices and values, it was hypothesized that kibbutz children would be more cooperative than urban middle class children when playing a social-interaction game with their peers.

Method

Subjects

The kibbutz sample included 40 children, 20 boys and 20 girls, ages ranging from six to 10 years, with a mean age of eight years. Children from three different kibbutzim were included: Beit Zerah (in the Jordan Valley), Beit Hashita (in the Yisrael Valley), and Ein Hahores (in the Sharon). Both Ein Hahores and Beit Zerah belong to the Hashomer Hatzair, a radical socialist movement which is ideologically the most puritanical of all kibbutz movements in Israel. Beit Hashita belongs to Hakibbutz Hameuhad, a relatively more moderate ideological movement. All of the kibbutz children who played the experimental game knew the children with whom they participated.

They were usually from the same kvutza, a group within a kibbutz comprised of children who spend almost all their time together.

The city sample consisted of 40 children, 20 boys and 20 girls, ages ranging from six to 10 years, with a mean age of eight years. These children were from Mount Carmel, an upper middle class community in which most people have a relatively high income. The children, who were spending their vacation at a summer day camp, had already been together for several weeks and therefore knew each other quite well. This particular group of urban children was chosen because they were quite similar to kibbutz children in intelligence and opportunities for development.

In both samples, by far the majority of the children had been born in Israel.

Apparatus

The Madsen Cooperation Board was used. (See Figure 1.) This board

 Insert Figure 1 about here.

is 18 in. square with an eyelet fastened to each of the four corners. Strings strung through each eyelet are connected to a metal weight which serves as a holder for a ball point pen filler. A sheet of paper is placed on the board for each trial, thus recording the movement of the pen as Ss pull their strings. Because the string passes through the eyelets, any individual child can pull the pen only toward himself. In order to draw a line through the other three circles, all the children in the game must work together. The essential features of the apparatus and position of circles to be crossed can be seen in Figure 1.

Experiment 1.

The purpose of this experiment was to train the Ss in playing the game in a cooperative manner, so that the children would know how to play cooperatively under the individual reward condition, if motivated to do so. It would also reveal whether there was any pre-existing tendency to behave competitively or cooperatively.

Procedure

Two treatment conditions, Group Reward (GR) and Individual Reward (IR), were compared over three trials. In trials 1-3, (GR), all four children received a prize as soon as the group was able to draw a line through the four circles within the time allowed. In trials 4-6, (IR), each of the four players had his own circle and would receive a prize only when his circle was crossed. The instructions were such that the children could decide whether to compete or cooperate in either condition.

A group of four children of the same sex and approximately the same age were taken from the group (either kibbutz or city) into a separate room. The experimental board was set on a low table. The four children were seated at the four corners of the board and told that they were going to play a game. The children were instructed to hold on to the handles, one in each hand, and to listen to the instructions of the game.

Instructions for Trials 1-3.

"As you can see, when we pull the strings, the pen draws lines. In this game we are going to pull the strings and draw lines, but in a special way. The aim of the game is for you to draw a line over the four circles within one minute. If you succeed in doing this, each one of you will get a prize. If you cover the four circles twice, everyone will get

two prizes, and so on. But if you cover less than four circles no one will get a prize.

You may talk to each other, but are not allowed to touch another child's string or handle. Are there any questions?"

While the children were playing the game, the E announced the number of circles crossed and also announced when a round of four circles was completed. When a minute was up, the children were stopped, and the E announced and recorded the number of rounds and extra circles the children had crossed.

At this point each child was given a paper bag with his name and prizes were given out in accordance with the number of rounds completed. Trial 1 was completed and a new sheet of paper was attached to the board. The procedure was repeated for the second and third trials.

Instructions for Trials 4-6

"Now the game is going to be somewhat different. Now every one of you gets his own circle. This is David's circle," (E writes name on a circle to the right of David). "This is Ron's circle," etc.
 "Now, when the pen draws a line across one of the circles, the child whose name is in the circle gets a prize. When it crosses David's circle, David gets a prize; when it crosses Ron's circle, Ron gets a prize, and so on. You will have one minute to play before I stop you. Are there any questions?"

During this trial, E announced every time a circle was crossed. When the trial was over, the E announced and recorded for each child, the number of times his circle had been crossed. Prizes were given out accordingly. Trials five and six followed the same procedure as trial four.

Results

The number of circles crossed on each trial was the dependent

variable. Since any competitive behavior reduced the possible number of circles a group could cross, a higher number of circles indicated a higher degree of cooperation.

Table 1 shows the average number of circles (over 3 trials)

Insert Table 1 about here

crossed by the two subcultural samples under the group and individual reward conditions. The difference between the groups under the IR condition was significant at the .01 level, with kibbutz children improving under this condition while city children showed a sharp decrease ($p < .005$) in performance. No significant difference was found between city and kibbutz groups under the GR condition.

In examining the change in performance over the two conditions, it was found that only two kibbutz groups decreased in performance, seven groups improved, and one remained the same. Among the city groups, nine decreased and only one improved. This difference is significant at the .005 level.

Figure 2 shows the performance of the two groups on Trials one

Insert Figure 2 about here

through six. As can be seen, both groups crossed fewer circles on Trial four, when individual reward was introduced. While the average drop from Trial three to Trial four for city groups was 10.1 circles, the average drop in the kibbutz was 5.6 circles. This difference in amount of decrease was significant at the .05 level. It also seems

that this lowered performance occurred for different reasons. By Trial four, most city groups began competing, thus reducing drastically the number of circles crossed. The performance of the kibbutz groups, on the other hand, simply slowed down. The reason for this could have been either because they made an effort to avoid competition, or because they were adjusting to the new rules as if it were a different game. It can also be seen from Figure 2 that the kibbutz groups recovered on Trials five and six, whereas the city groups never regained the level of performance attained under the GR condition.

While the differences between the two groups were not significant under the GR condition trials, the kibbutz groups performed significantly better than city groups on all individual reward trials (Trial 4, $p < .01$; Trials 5 and 6, $p < .05$).

Table 2 shows the separate performance of males and females of the

Insert Table 2 about here

two groups under the two conditions. The same pattern of results occurs for both sexes. However, the difference between kibbutz and city groups under the IR condition is much greater for the boys. Urban boys cross 30.6 fewer circles than kibbutz boys whereas kibbutz girls show a difference of only 12.8 circles over urban girls under the individual reward condition. Evidently both kibbutz boys and girls continue to cooperate even when the rules reward individual competition.

Experiment II

The purpose of this experiment was to compare the behavior of kibbutz and city children in a situation where competition is an

adaptive behavior. Since in this situation the circles were at the corners of the page, it was possible for a competitive child to win more prizes than the others by pulling the string sharply towards himself and drawing a line through his own circle.

Procedure

The circles were drawn at the corners of the page so that each child had a circle directly in front of him. The following instructions were given:

"As you see, the circles are now at the corners of the page. This time the game is somewhat different so listen carefully. Again every one has his own circle. (E writes each child's name in the circle closest to him.) Now, when the pen draws a line across the circle of one of the children, that child will get a prize. At this point, we shall stop the game and return the pen to the center of the page and begin again. We will do this four times without changing the page. Are there any questions?"

When a line was drawn across one of the circles, the E stopped the game and recorded the time of the trial and the order. The child whose circle was crossed received a prize. The same procedure was carried out for trials 2, 3, and 4. If no circle was crossed within a minute, E stopped the game and began a new trial.

When the experiment was over, E gave prizes to those children who had not won many during the game, so that all children received about the same number of prizes. Although the prizes were of little intrinsic value, (candy, gum, and small plastic charms) they were effective reinforcers as demonstrated by the children's eagerness to work for them.

Results

Any line which passed through an individual circle, without deviating

more than one inch from the direct path from the center starting point to the circle, and which did not reverse directions within those limits, was considered a non-competitive response. Lines which violated these criteria were considered competitive in that they indicated that children were pulling against each other.

Table 3 gives the average number of non-competitive responses per trial

Insert Table 3 about here

for the two groups, by sex.

Kibbutz groups had more non-competitive responses than urban groups (mean 2.6 vs. 1.4, respectively), but this difference only approaches significance ($t = 1.70$ $p > .05$ $\leq .10$).

Most of the differences between kibbutz and city groups can be attributed to the fact that the city boys were more competitive than city girls, as well as both boys and girls from the kibbutzim.

Discussion

The hypothesis that kibbutz children would show more cooperative behavior than city children in Israel, was confirmed. Under the individual reward condition, the kibbutz children showed performance superior to that of the city children. Since both groups had learned the task equally well, as evident by their similar performances under the group reward condition, differences in performance under the individual reward condition can be attributed to different types of motivational stress in urban and kibbutz environments. Thus, changes in instructions produced different behaviors in city children, but not kibbutz children. The slight improvement in performance for kibbutz

groups under the individual reward condition probably reflects the effect of practice as the children continue to follow the cooperative techniques adopted under the group reward condition. Once reward was given out on an individual basis, city children changed the tactics they had used to obtain group rewards and began pulling towards themselves. Even though they obviously realized, after trials four and five, that these competitive procedures were not paying off for any of them, they were unable to stop their irrational competition.

Perhaps of greater interest is the fact that the children themselves did not enjoy the competition and wanted to change the rules. A number of children kept asking E not to write names on the circles, evidently realizing that as long as there were names on the circles they would continue to compete.

At times a child would suggest that they take turns, or help each other, but usually the other children refused. In some isolated cases, the children agreed to cooperate, but the instant one child pulled a little harder, cooperation broke down completely and they all started pulling towards themselves.

Among the kibbutz groups the picture was entirely different. When individual reward instructions were introduced, the first response of most of the groups was to set up rules for cooperation. Some examples of these responses were: "OK gang, let's go in turns", or "Let's help each other", or "We'll start here, then here, etc". Some groups asked E if they were allowed to help each other, or whether they could go in rounds like before. When E said they could do as they wished, they always decided upon cooperation. These children were very organized in their performance. They usually had decided the order before the trial began. During the game they were also very active in directing one another.

The kibbutz children were very eager to do well as a group, and tried their best to improve their performance on every subsequent trial. Some of the groups asked to compare their results with other groups and wanted to know what the best score had ever been. Such responses, indicate that a desire to achieve and to do well characterize these children, who do compete with other groups on the kibbutz, but not within the group. At the group level, they cooperate and work together as a team.

In most of the groups there was a great concern about equality in prizes. "Every one should get the same". They were so concerned about this that, in many cases, they rotated the starting point so that if they were stopped before a round was completed a different child would get the extra prize on each trial.

When, in some isolated cases, one of the children tried to compete against the others, the group usually restrained him.

In general, the results and observations indicate that when cooperative behavior was adaptive, children of the kibbutz were generally able to cooperate successfully for maximum performance, whereas urban children were usually not able to do so.

Romney and Romney (1963) in studying Mexican communities, reaches the popular conclusion that strong achievement orientation would necessarily involve competition. It seems that in the case of the kibbutz this does not hold. The children of the kibbutz are oriented towards high achievement, but yet learn to cooperate, even if at times this means giving up personal success for group success.

Many aspects of kibbutz life and collective education, are potentially competitive. The children of the kibbutz, more than those of the city, must compete

for the nurses' attention and affection, must compete for the toys they play with, etc. It is possible that because of this, the development of cooperative tendencies is so instrumental to proper functioning of the group, and that without such a development, conflict would be exceptionally severe.

In addition to the above study, 16 four-year-old kibbutz children, eight boys and eight girls, were given five trials under the individual reward condition. All four groups demonstrated strongly competitive behavior. No cooperation, no going in turns, no helping was evident. These results support Spiro's observation that cooperative play on the kibbutz is a function of age. It seems likely that children in the kibbutz are initially as strongly competitive as children in the city, but that after a certain age these tendencies are controlled or channeled into within-group cooperation. It is also possible that successful cooperation involves a level of cognitive development which has not yet emerged with the four-year-old child, but is evident with the six-year-old children. Both of these hypotheses warrant further investigation.

References

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Table 1

Total Number of Circles Crossed Under Group and Individual
Reward Conditions for Kibbutz and Urban Children

Group	Group Reward Trials			Individual Reward Trials			Total G. R.	Total I. R.
	1	2	3	4	5	6	1-3	4-6
Kibbutz (N = 40)	6.7	9.7	14.3	8.7	13.4	14.0	30.9	36.1
Urban (N = 40)	5.7	9.6	12.1	2.0	5.2	6.2	27.4	13.4

Table 2

Number of Circles Crossed over 6 Trials,
under 2 Reward Conditions, by Sex and Group

Group	Females		Males	
	Group	Individual	Group	Individual
Kibbutz	31.0	32.2	30.8	38.0
Urban	27.4	19.4	27.4	7.4

Table 3

Average Number of Non-Competitive Responses
per Trial, for Kibbutz & Urban Children, by Sex

Group	Females	Males
Kibbutz	2.8	2.4
Urban	2.2	.6

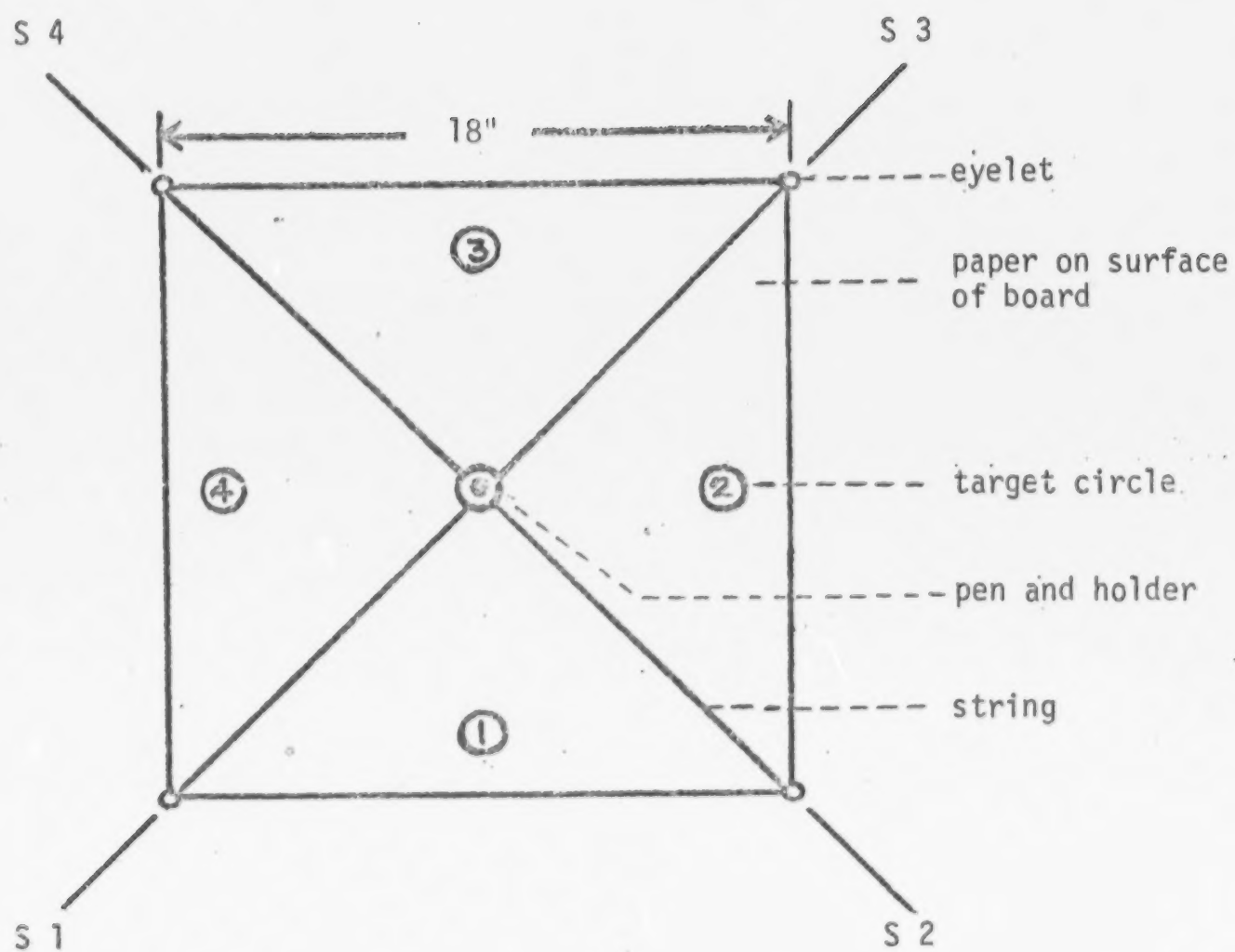


Fig. 1. Madsen Cooperation Board.

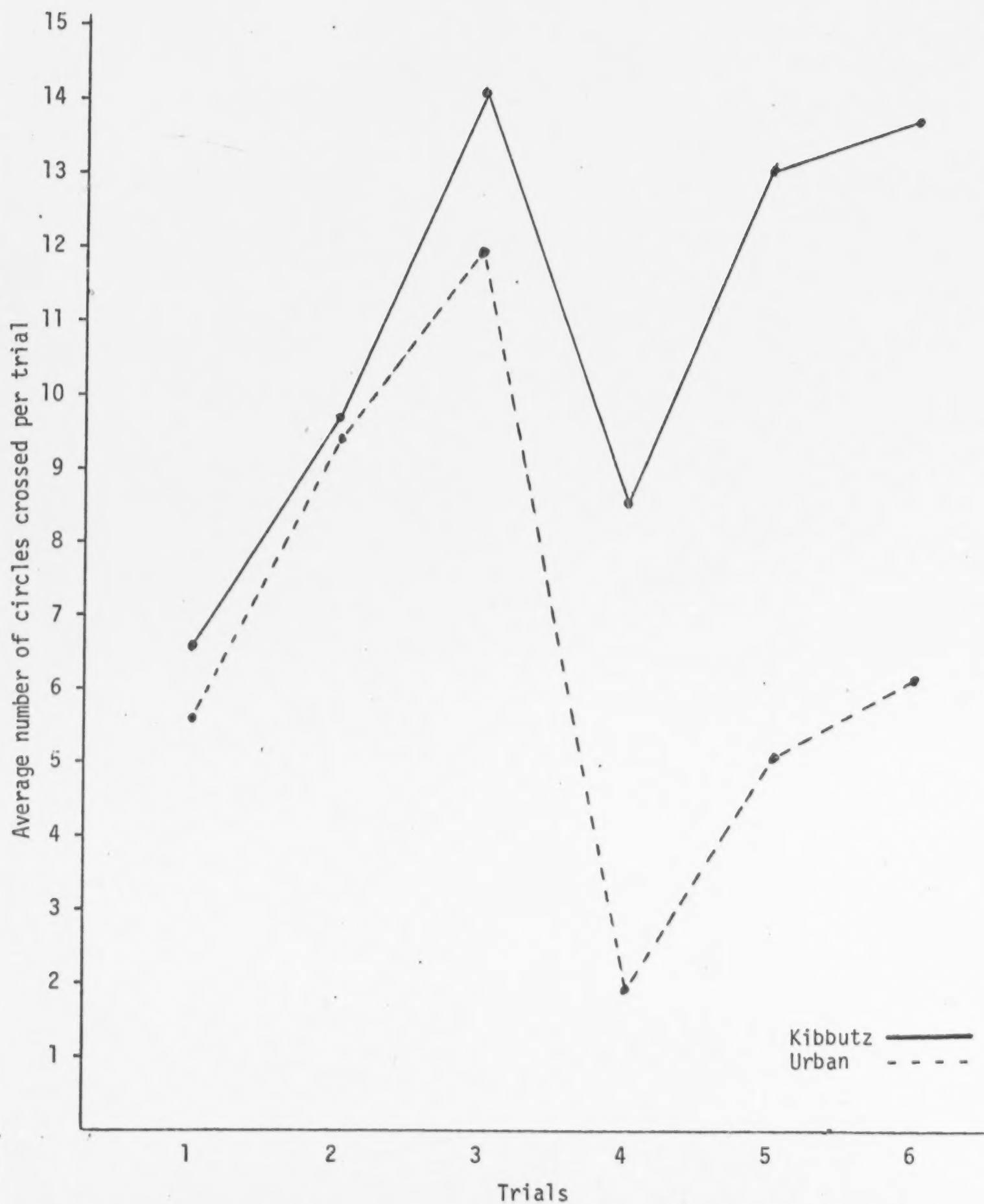


Fig. 2. Comparison of average number of circles crossed per trial by kibbutz and urban children, where Trials 1-3 are under group reward condition and Trials 4-6 are under individual reward condition.